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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/471,829	12/23/1999	MASATSUGU HATANAKA	49481(551)	8004
21874	7590	04/21/2005	EXAMINER	
EDWARDS & ANGELL, LLP			TURNER, SAMUEL A	
P.O. BOX 55874			ART UNIT	
BOSTON, MA 02205			PAPER NUMBER	
			2877	

DATE MAILED: 04/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

SM

Office Action Summary	Application No.	Applicant(s)	
	09/471,829	HATANAKA ET AL.	
	Examiner	Art Unit	
	Samuel A. Turner	2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 January 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 4-6 and 10-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 4-6, and 10-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Applicant is advised that should claims 4-6 be found allowable, claims 10, 11 and 14 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 4-6, and 10-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is confusing in that there are plurality of different light paths from the light source to the analyze unit. The light receiving unit directs light from the light source substantially perpendicular to the substrate and then receives light reflected from the substrate. This forms a first path from the light source to the analyze unit. The first optical fiber guides the light from the light source onto a plurality of sites on the substrate and receives light reflected from the plurality of sites. This forms a second path from the light source to the analyze unit. Finally, at least one of the plurality of additional optical fibers guides the reflected light from the substrate to the analyze unit. This forms a third path from the substrate to the analyze unit. The plurality of different paths is confusing and thus fails to distinctly claims the light path from the substrate to the analyze unit.

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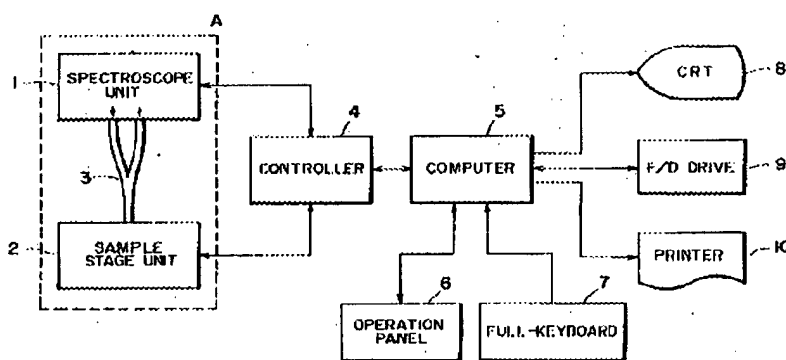
Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ban et al(4,787,749) in view of Aritoshi(JP 61-165608).

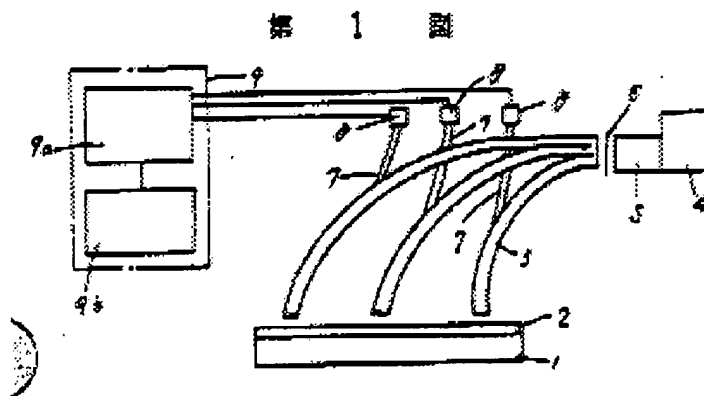
Ban et al teach a film thickness system comprising a light source(1a), at least one input and one output optical fiber(3) normal to the thin film, detector(1c), and computer(5). See figure 3A. In figure 7B Shows the input fiber D1 and a plurality of output fibers D2 arranged around the input fiber. However, Ban fails to teach a plurality of fiber input/outputs at different points on the sample.

**FIG. 3A****FIG. 7B**

Aritoshi teaches a thin film thickness system comprising a light source(4), spectroscop(5), a chopper(6), a plurality of branched input(3) and output fibers(7), a plurality of

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photodetectors(8), a data buffer(9a) which acts as a controller to transfer each wavelength successively, and a computing device(9b). See figure 1.

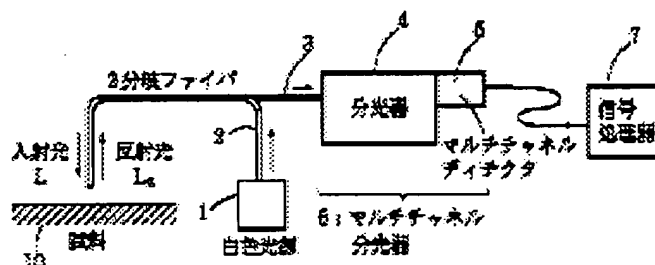


It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Ban apparatus by using a plurality of fibers in order to measure film thickness at all desired points on the substrate, as this is a mere duplication of parts which perform the same function as found in Ban. The means for selecting which output point to process would have been a mere matter of choice between functional equivalents such as the data buffer of Aritoshi, electrically gating each detector, or shuttering the input or output light, the chopper(6) of Aritoshi.

Claims 4-6, 10-18, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ban et al(4,787,749) and Aritoshi(JP 61-165608) as applied to claims 1 and 19 above, and further in view of Shigeki et al(JP 07-294220).

Shigeki et al teach a light source(1), optical fiber(2) which is normal to the thin film, output fiber(3), spectroscop(4), detector(5), and processor(7). See figure 1.

【図1】



Ban teaches solving for the thickness of a thin film by taking into account the absorption factor of the thin film. See the equations 5-10. However neither Ban or Shigeki teach the use of a robotic hand or relative location of the light receiving unit in regard to the outlet of the gate valve, or the specific equations claimed. Further, neither Ban or Shigeki teach a plurality of fiber input/outputs at different points on the sample.

With regard to claims 4, 10 and 20, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Ban apparatus by placing the spectroscope between the output fibers and detector, as taught by Shigeki, instead of between the source and input fiber. This is a simple rearrangement of parts which would produce an equivalent result, the dividing the output according to intensity of each wavelength.

With regard to claims 5, 6, 11, and 14; it would have been obvious to one of ordinary skill in the art at the time the invention was made derive the claimed equations from the basic properties of the light and the film properties as found in the Ban equations.

With regard to claims 13, 16, and 18; it would have been obvious to one of ordinary skill in the art at the time the invention was made to locate the light receiving unit in any operable

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position since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70.

As to the robot hand of claims 12, 15, and 17; substrates are made in a clean room and not touched by human hands. The wafer is moved between deposition, exposure, and measurement by a conveyer such as a mechanical or robot arm.

Response to Arguments

Applicant's arguments filed 25 January 2005 have been fully considered but they are not persuasive and are moot in view of the new ground(s) of rejection.

In response to applicant's argument that the examiner has combined an excessive number of references, reliance on a large number of references in a rejection does not, without more, weigh against the obviousness of the claimed invention. See *In re Gorman*, 933 F.2d 982, 18 USPQ2d 1885 (Fed. Cir. 1991). In the new grounds of rejection, Aritoshi has been used to teach a plurality of branched input/output fibers in order to measure film thickness at all desired points on the substrate. This teaching is used to modify the Ban apparatus for simultaneous measurement. The additional limitation of claims 4, 10, and 20 that the spectroscope be placed between the output fibers and detector instead of between the source and input fiber is found in Shigeti. This teaching is relied upon to further modify the Ban apparatus.

For each combination motivation has been provided first in Ban/Aritoshi to measure all desired points on the substrate simultaneously, and then with the addition of Shigeki to move the spectroscope between the output fibers and detector instead of between the source and input fiber as a simple rearrangement of parts. This is the same logic found in the previous rejection.

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Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

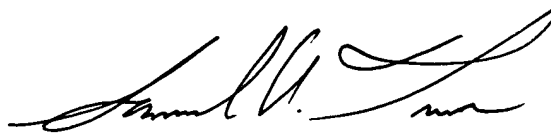
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samuel A. Turner whose phone number is **571-272-2432**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr., can be reached on **571-272-2800 ext. 77**.

The fax phone number for the organization where this application or proceeding is assigned is **703-872-9306**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at **866-217-9197** (toll-free).



Samuel A. Turner
Primary Examiner
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